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## ABSTRACT OF THE DISCLOSURE

In a preferred embodiment, linear stepper motor, comprising; an annular stator structure; an axially extending, cylindrical, permanent magnet shaft extending coaxially through said annular stator structure; and the axially extending, cylindrical, permanent magnet shaft having a smooth external surface along a portion thereof with axially alternating N and S poles defined circumferentially in an outer periphery of the portion of the axially extending, cylindrical, permanent magnet shaft. The present invention also provides a method of magnetizing the shaft of such a motor and a fixture and method of manufacturing the fixture therefor.